

FURTHER PARASITE ASSOCIATIONS FOR SOME AUSTRALIAN BUTTERFLIES (LEPIDOPTERA)

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Abstract

Additional records of parasites of some Australian butterflies, principally HesperIIDae, are listed with locations where hosts were found. Levels of parasitism in *Hesperilla flavescens* Waterhouse are discussed.

Introduction

There is no comprehensive listing of natural enemies for Australian insects generally. However, Crosskey (1973) and Cantrell (1986) provided extensive lists of the Australian hosts of Tachinidae (Diptera) which include many butterfly species. The literature on the parasitic Hymenoptera is more scattered and includes Bouček (1988), Gauld (1984) and Gupta (1987).

Over the last 40 years I have bred a large number of parasites from butterfly pupae and the opportunity is taken to add records not previously published. These parasites belong to the Diptera (tachinid flies) and Hymenoptera (ichneumonid, braconid and chalcidoid wasps). The high proportion of examples from the HesperIIDae is due to my particular interest in that family, and should not be used to draw inferences as to the incidence of parasitism over all the families.

Voucher specimens are currently held in my collection but will be passed to the Australian National Insect Collection, Canberra, in due course.

The lists

Table 1 lists hymenopterous parasites, hosts and the locations from which hosts were obtained. Table 2 gives similar data for tachinid parasites. Table 3 lists parasites for each host species.

The tables include a small number of tachinid records not listed by Cantrell (1986) and the sources of these records are provided in the footnotes to the tables.

I have indicated those host records which appear to be new, and added those previously recorded for which I have location data, as this is useful in indicating parasite distributions.

Levels of parasitism

In a recent study (Crosby 1990) of *Hesperilla flavescens* (Lepidoptera: HesperIIDae), I counted larvae and pupae of the spring 1988 and autumn 1989 broods in the colonies in the Altona-Point Cook area and noted the incidence of parasitism shown in Table 4.

Discussion

The similar level of parasitism in *H. flavescens* at Altona and Point Cook of 14% means that this is a significant factor controlling adult insect numbers, certainly during the spring emergence. At these sites the parasites are mainly

Table 1. Hymenopterous parasites recorded from some Australian butterfly hosts, with localities.

Parasite	Host	Localities
ICHNEUMONIDAE		
Pimplinae		
<i>Echthromorpha intricatoria</i> (Fab.)		
	H <i>Trapezites symmomus</i> *	VIC: Seaford.
	H <i>Hesperilla chrysotricha</i>	VIC: Barwon Heads, Dromana, Nelson, Tooradin. S.A.: Bridgewater, Mt Compass (2). TAS: Prince of Wales Bay (2). W.A.: Bunbury (2). S.A.: Bridgewater. TAS: Mt Wellington (2).
	H <i>H. donnysa</i>	S.A.: Bridgewater. TAS: Mt Wellington (2).
	H <i>H. ornata</i> *	VIC: Belgrave.
	H <i>H. flavescens</i> *	VIC: Aireys Inlet, Altona, Douglas. S.A.: St Kilda.
	H <i>Oreisplanus perornatus</i> *	VIC: Heathmont, Narbethong.
	H <i>Antipodia atralba</i> *	VIC: Hattah.
	P <i>Papilio anactus</i> *	N.S.W.: Albury.
	L <i>Ogyris olane</i> *	N.S.W.: Buronga (2).
<i>Theronia steindachneri</i> Krieger	H <i>Hesperilla picta</i> *	VIC: Gipsy Point.
<i>Xanthopimpla arealis</i> Krieger	H <i>Hesperilla picta</i> *	VIC: Gipsy Point.
Ichneumoninae		
<i>Gavrana</i> sp.		
	L <i>Paralucia aurifera</i> *	VIC: Emerald.
	L <i>Hypochrysops byzos</i> *	N.S.W.: Armidale. VIC: Kallista.
<i>?Lissosculpta</i> sp.		
	H <i>Hesperilla donnysa</i> *	VIC: Dewhurst, Heathmont, Moondarra, N.Yarragon, Nowa Nowa, Rokeby, Waverley.
	H <i>H. idothea</i> *	VIC: Belgrave.
	H <i>H. chrysotricha</i> *	VIC: Aireys Inlet, Labertouche.
	H <i>Oreisplanus perornatus</i> *	VIC: Narbethong.
Campopleginae		
<i>Campoletis tasmaniensis</i> (Cameron)		
	L <i>Lampides boeticus</i> *	VIC: North Balwyn.
<i>Casinaria hesperiophaga</i> Jerman & Gauld		
	H <i>Trapezites symmomus</i> *	VIC: Seaford.
	H <i>Hesperilla donnysa</i>	VIC: Warrandyte.
	H <i>H. chrysotricha</i> *	VIC: Altona, Point Lonsdale.
<i>Casinaria meridionalis</i> (Turner)		
	H <i>Hesperilla donnysa</i>	VIC: Broadford (2), Frankston, Heathmont, Labertouche, Red Hill South, Rokeby, Toora (2), Waverley.

Table 1 (cont.). Hymenopterous parasites recorded from some Australian butterfly hosts, with localities.

Parasite	Host	Localities
Ichneumoninae (cont.)		
	H <i>H. chrysotricha</i>	VIC: Dromana, Heywood (2), Labertouche.
	H <i>H. picta</i> *	VIC: Gipsy Point.
	H <i>Oreisplanus munionga</i> *	VIC: Glen Wills (2), Mt Hotham.
Banchinae		
<i>Australoglypta</i> sp.	H <i>Hesperilla crypsargyra</i> *	VIC: Grampians.
Anomalinae		
<i>Agrypon coarctatum</i> (Brullé)	H <i>Hesperilla ornata</i> *	VIC: Belgrave.
	H <i>H. picta</i> *	VIC: Nowa Nowa.
	H <i>H. chrysotricha</i> *	VIC: Walkerville.
	H <i>Oreisplanus perornatus</i> *	VIC: Heathmont, Narbethong.
	N <i>Tisiphona abeona</i> *	VIC: Belgrave.
<i>Habronyx (Austranomalon) victorianus</i> (Morley)	L <i>Paralucia aurifera</i> *	VIC: Emerald.
BRACONIDAE		
Microgasterinae		
<i>Cotesia deliadis</i> (Bingham)	W <i>Delias argenthona</i>	Not stated. (1)
<i>Cotesia rufiventris</i> (Bingham)	L <i>Ogyris genoveva</i> *	QLD: Townsville (1).
<i>Cotesia glomerata</i> (Linn.)	W <i>Pieris rapae</i>	Not stated (1)
<i>Cotesia rubecula</i> (Marshall)	W <i>Pieris rapae</i>	Not stated (1)
<i>Cotesia</i> sp.	H <i>Hesperilla donnysa</i> *	VIC: Moondarra.
	H <i>H. idothea</i> *	VIC: Grampians.
<i>Dolichogenidea</i> sp.	H <i>Ocybadistes walkeri</i> *	VIC: Malvern.
Genus indet.	L <i>Hypochrysops ignitus</i>	VIC: Little Desert.
? Braconinae		
Genus indet.	H <i>Hesperilla donnysa</i>	VIC: Frankston.
CHALCIDIDAE		
Chalcidinae		
<i>Brachymeria lasus</i> (Walker)	H <i>Hesperilla donnysa</i> *	QLD: Noosa. VIC: Frankston, Moondarra. S.A: Port Lincoln.
	H <i>Hesperilla idothea</i> *	N.S.W: Armidale.
	H <i>H. picta</i> *	N.S.W: Pymble. VIC: Gipsy Point.

Table 1 (cont.). Hymenopterous parasites recorded from some Australian butterfly hosts, with localities.

Parasite	Host	Localities
Chalcidinae (cont.)		
	H <i>H. crypsargyra</i> *	N.S.W: Armidale. VIC: Grampians.
	N <i>Euploea core</i> *	QLD: Brisbane (3).
<i>Brachymeria</i> sp.	H <i>Hesperilla flavescens</i> *	VIC: Rossbridge, W. Natimuk, Willaura.
	H <i>Antipodia atralba</i> *	VIC: Hattah.
Haltichellinae		
<i>Antrocephalus</i> sp.	L <i>Jalmenus icilius</i> *	VIC: Beaufort.
PTEROMALIDAE		
Pteromalinae		
<i>Pteromalus puparum</i> (Linn.)	P <i>Papilio anactus</i>	N.S.W: Albury.
EUPELMIDAE		
Eupelminae		
<i>Anastatus</i> sp.	H <i>Hesperilla donnysa</i> *	VIC: Gipsy Point.

Key to References: 1. Parrott 1953; 2. Parrott 1957; 3. Rahman and Zalucki 1986;

* - New host record

Key to Butterfly Families: H - Hesperidae, P - Papilionidae, W - Pieridae,
N - Nymphalidae, L - Lycaenidae.

Table 2. Tachinid parasites showing butterfly hosts and localities.

Parasite	Host	Localities
BLONDELIINI		
<i>Trigonospila</i> sp.	L <i>Hypochrysops byzos</i> *	VIC: Kallista.
ETHILLINI		
Genus indet.	H <i>Hesperilla donnysa</i>	VIC: Dergholm, Rokeby.
EXORISTINI		
<i>Exorista flaviceps</i> Macquart	L <i>Ogyris oroetes</i> *	W.A: Hyden.
STURMIINI		
<i>Blepharipa</i> sp.	H <i>Hesperilla ornata</i> *	VIC: Heathmont.
<i>Palexorista</i> sp.	L <i>Ogyris oroetes</i> *	W.A: Hyden.
	L <i>Jalmenus icilius</i> *	VIC: Grampians.
<i>Paradrino laevicula</i> (Mésnil)	N <i>Euploea core</i>	QLD: Brisbane (3).
? <i>Paradrino</i> sp.	L <i>Jalmenus ictinus</i> *	VIC: Kerrisdale.

Table 2 (cont.). Tachinid parasites showing butterfly hosts and localities.

Parasite	Host	Localities
STURMIINI		
<i>Polychaeta</i> sp.		
	L <i>Ogyris olane</i> *	S.A: Brownhill Ck.
<i>Sturmia convergens</i> (Wiedemann)	N <i>Danaus plexippus</i>	QLD: SE Queensland (5).
<i>Sturmia</i> sp.	N <i>Danaus plexippus</i> *	S.A: Brownhill Ck. not stated (4).
<i>Tritaxys</i> sp.		
	H <i>Hesperilla donnysa</i>	VIC: Labertouche, Moondarra, Peterborough, Rokeby.
	H <i>H. ornata</i>	VIC: Belgrave, Heathmont, N. Trafalgar.
	H <i>H. idothea</i> *	VIC: Belgrave.
	H <i>H. crypsargyra</i> *	VIC: Grampians.
	H <i>H. chrysotricha</i> *	VIC: Aireys Inlet, Anglesea, Lake Bolac.
	H <i>H. flavescens</i> *	VIC: Altona, Hamilton, Rossbridge, W. Natimuk.
	H <i>Antipodia chaostola</i> *	VIC: Tynong.
	H <i>Oriesplanus perornatus</i> *	VIC: Frankston, E. Kyneton.
WINTHEMIINI		
<i>Winthemia sumatrana</i> Townsend		
	N <i>Danaus plexippus</i>	Not stated (4).
	N <i>Euploea core</i>	QLD: Brisbane (3).

Keys to references: 3. Rahman and Zalucki 1986; 4. Smithers 1973; 5. Zalucki 1981.

Key to butterfly families: H HesperIIDae, P Papilionidae, W Pieridae,

N Nymphalidae, L Lycaenidae. * New host record.

Table 3. Host-parasite list.

Host	Parasite	Order
HESPERIIDAE		
<i>Trapezites symmomus</i> Hübner		
	<i>Echthromorpha intricatoria</i>	H
	<i>Casinaria hesperiophaga</i>	H
<i>Hesperilla idothea</i> (Miskin)		
	? <i>Lissosculpta</i> sp.	H
	<i>Cotesia</i> sp.	H
	<i>Brachymeria lasus</i>	H
	<i>Tritaxys</i> sp.	D
<i>Hesperilla donnysa</i> Hewitson	H	
	<i>Echthromorpha intricatoria</i>	H
	? <i>Lissosculpta</i> sp.	H
	<i>Casinaria hesperiophaga</i>	H
	<i>Casinaria meridionalis</i>	H
	<i>Cotesia</i> sp.	H
	Gen. indet. (Braconinae)	H
	<i>Brachymeria lasus</i>	H

Table 3 (cont.). Host-parasite list.

Host	Parasite	Order
HESPERIIDAE (cont.)		
	<i>Anastatus</i> sp.	H
	Gen. indet. (Ethillini)	D
	<i>Tritaxys</i> sp.	D
<i>Hesperilla flavescens</i> Waterhouse		
	<i>Echthromorpha intricatoria</i>	H
	<i>Brachymeria</i> sp.	H
	<i>Tritaxys</i> sp.	D
<i>Hesperilla chrysotricha</i> (Meyrick and Lower)		
	<i>Echthromorpha intricatoria</i>	H
	? <i>Lissosculpta</i> sp.	H
	<i>Casinarina hesperiophaga</i>	H
	<i>Casinarina meridionalis</i>	H
	<i>Agrypon coarctatum</i>	H
	<i>Tritaxys</i> sp.	D
<i>Hesperilla ornata</i> (Leach) H		
	<i>Echthromorpha intricatoria</i>	H
	<i>Agrypon coarctatum</i>	H
	<i>Tritaxys</i> sp.	D
<i>Hesperilla picta</i> (Leach)		
	<i>Theronia steindachneri</i>	H
	<i>Xanthopimpla arealis</i>	H
	<i>Casinarina meridionalis</i>	H
	<i>Agrypon coarctatum</i>	H
	<i>Brachymeria lasus</i>	H
<i>Hesperilla crypsargyra</i> (Meyrick)		
	<i>Australoglypta</i> sp.	H
	<i>Brachymeria lasus</i>	H
	<i>Tritaxys</i> sp.	D
<i>Oreisplanus munionga</i> (Olliff)		
	<i>Casinarina meridionalis</i>	H
<i>Oreisplanus perornatus</i> (Kirby)		
	<i>Echthromorpha intricatoria</i>	H
	? <i>Lissosculpta</i> sp.	H
	<i>Agrypon coarctatum</i>	H
	<i>Tritaxys</i> sp.	D
<i>Antipodia atralba</i> (Tepper)		
	<i>Echthromorpha intricatoria</i>	H
	<i>Brachymeria</i> sp.	H
<i>Antipodia chaostola</i> (Meyrick)		
	<i>Tritaxys</i> sp.	D
<i>Ocybadistes walkeri</i> (Heron)		
	<i>Dolichogenidea</i> sp.	H
PAPILIONIDAE		
<i>Papilio anactus</i> W.S. Macleay		
	<i>Echthromorpha intricatoria</i>	H
	<i>Pteromalus puparum</i>	H

Table 3 (cont.). Host-parasite list.

Host	Parasite	Order
PIERIDAE		
<i>Delias argenthona</i> (Fabricius)	<i>Cotesia deliades</i>	H
<i>Pieris rapae</i> (Linnaeus)	<i>Cotesia glomerata</i>	H
NYMPHALIDAE		
<i>Danaus plexippus</i> (Linnaeus)	<i>Sturmia convergens</i>	D
	<i>Sturmia</i> sp.	D
	<i>Winthemia sumatrana</i>	D
<i>Euploea core</i> (Cramer)	<i>Brachymeria lasus</i>	H
	<i>Paradrino laevicula</i>	D
	<i>Winthemia sumatrana</i>	D
<i>Tisiphone abeona</i> (Donovan)	<i>Agrypon coarctatum</i>	H
LYCAENIDAE		
<i>Paralucia aurifera</i> (Blanchard)	<i>Gravana</i> sp.	H
	<i>Habronyx victorianus</i>	H
<i>Hypochrysops ignitus</i> (Leach)	Gen. indet. (Microgasterinae)	H
<i>Hypochrysops byzos</i> (Boisduval)	<i>Gavrana</i> sp.	H
	<i>Trigonospila</i> sp.	D
<i>Ogyris genoveva</i> Hewitson	<i>Cotesia rufiventris</i>	H
<i>Ogyris olane</i> Hewitson	<i>Echthromorpha intricatoria</i>	H
	<i>Polychaeta</i> sp.	D
<i>Ogyris oroetes</i> Hewitson	<i>Exorista flaviceps</i>	D
	<i>Palexorista</i> sp.	D
<i>Jalmenus ictinus</i> Hewitson	? <i>Paradrino</i> sp.	D
<i>Jalmenus icilius</i> Hewitson	<i>Antrocephalus</i> sp.	H
	<i>Palexorista</i> sp.	D
<i>Lampides boeticus</i> (Linnaeus)	<i>Campoletis tasmaniensis</i>	H

Key to Parasite Orders: H - Hymenoptera (Table 1)

D - Diptera (Table 2)

Table 4. Parasitism of immature stages of *Hesperilla flavescens* Waterhouse (Lepidoptera: Hesperiiidae) from the Altona-Point Cook area.

	Altona Spring 1988	Point Cook Spring 1988	Point Cook Autumn 1989
Total number of larvae and pupae	292	78	95
Number of larvae and pupae parasitised	41	11	7
Percentage parasitism	14%	14%	7%

Echthromorpha intricatoria (Ichneumonidae), *Casinaria* sp. (Ichneumonidae) and *Tritaxys* sp. (Tachinidae). The lower level of parasitism in the autumn brood at Point Cook may be due to the number of parasites declining during summer coupled with the lower number of hosts.

At Murtcaim, between Point Cook and Geelong, I have estimated the level of parasitism for this species as 35-40%, whereas, in most of the other 21 colonies investigated, in a sample of around 3000, the level was 10-15%.

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